WHAT IS CLAIMED IS:

1. An exhaust processing process of a processing apparatus for processing a substrate or a film, comprising the steps of: after processing a substrate or a film, introducing a non-reacted gas and/or a by-product into a trap means having therein a filament comprising a high-melting metal material comprising as a main component at least one of tungsten, molybdenum and rhenium; and processing the non-reacted gas and/or the by-product inside the trap means.

2. The exhaust processing process according to claim 1, wherein the processing apparatus is an apparatus for forming a deposited film on the substrate by a plasma CVD process.

3. The exhaust processing process according to claim 1, wherein the processing apparatus is an apparatus for forming a deposited film on the substrate by a thermal CVD process.

4. The exhaust processing process according to claim 1, wherein the processing apparatus is an apparatus for forming a deposited film on the substrate by a photo CVD process.

5. The exhaust processing process according to claim 1, wherein the processing apparatus is an apparatus for processing the film by a dry etching process.

6. The exhaust processing process according to claim 1, wherein the temperature of the filament is 500°C or more.

7. The exhaust processing process according to claim 1, wherein the temperature of the filament is 1400°C or more.

8. The exhaust processing process according to claim 1, wherein the configuration of the filament comprises a single linear shape, a plurality of linear shapes or a linear shape wound in spirals.

9. The exhaust processing process according to claim 1, wherein the film is a deposited film comprising a silicon-based amorphous or silicon-based mycrocrystalline material.

10. The exhaust processing process according to claim 1, wherein the non-reacted gas and/or the by-product comprises silicon or a compound thereof as a main component.

11. The exhaust processing process according to claim 1, wherein a wall surface of the trap is of a double structure, and an inner wall surface is detachable.

12. A processing apparatus having a processing chamber for processing a substrate or a film therein and an exhaust means for exhausting a gas from the processing chamber, comprising a trap means provided between the processing chamber and the exhaust means, for causing a chemical reaction in a non-reacted gas and/or a by-product during processing, and a filament provided inside the trap means and comprised of a metal or an alloy comprising as a main component at least one of tungsten, molybdenum and rhenium.

13. A processing apparatus having a processing space for processing a substrate or a film therein and an exhaust means for exhausting a gas from the processing space, comprising means provided between the processing space and the exhaust means, for causing a chemical reaction in a non-reacted gas and/or a by-product during processing of the substrate or the film, wherein the means comprises a heat generating member comprising phosphorus (P) atoms.

14. The processing apparatus according to

claim 13, wherein the heat generating member comprising phosphorus atoms contains at least one of chromium (Cr), molybdenum (Mo), tungsten (W), vanadium (V), niobium (Nb), tantalum (Ta), titanium (Ti), zirconium (Zr) and hafnium (Hf).

15. The processing apparatus according to claim 13, wherein the amount of phosphorus atoms contained in the heat generating member is 0.1% or more in an atomic composition ratio relative to total atomic components constituting the heat generating member.

16. The processing apparatus according to claim 13, which is used while the temperature of the heat generating member is set to 500°C or more.

17. The processing apparatus according to claim 13, wherein the means for causing the chemical reaction is provided in an exhaust gas flow path in an exhaust pipe provided between the processing space and the exhaust means.

18. A processing apparatus having a processing space for processing a substrate or a film therein and an exhaust means for exhausting a gas from the processing space, comprising between the processing space and the exhaust means, means for causing a

chemical reaction in a non-reacted gas and/or a by-product during processing of the substrate or the film, wherein the means comprises a heat generating member comprising silicon (Si) atoms.

19. The processing apparatus according to claim 18, wherein the heat generating member comprises the silicon atoms contains at least one of chromium (Cr), molybdenum (Mo), tungsten (W), vanadium (V), niobium (Nb), tantalum (Ta), titanium (Ti), zirconium (Zr) and hafnium (Hf).

20. The processing apparatus according to claim 18, wherein the amount of silicon atoms contained in the heat generating member is 0.1% or more in an atomic composition ratio relative to total atomic components constituting the heat generating member.

21. The processing apparatus according to claim 18, which is used while the temperature of the heat generating member is set to 500°C or more.

22. The processing apparatus according to claim 18, wherein the means for causing the chemical reaction is provided in an exhaust gas flow path in an exhaust pipe provided between the processing space and the exhaust means.

23. A processing apparatus having a processing chamber and an exhaust means for exhausting a gas from the processing chamber, comprising a chemical reaction causing means provided in an exhaust path connecting the processing chamber and the exhaust means, for causing a chemical reaction in a non-reacted gas and/or a by-product exhausted from the processing chamber, and a recovering means provided within a distance of 5 cm from the chemical reaction causing means, for recovering a chemical reaction product generated by the chemical reaction causing means.

24. The processing apparatus according to claim 23, wherein the recovering means also serves as a wall surface of the exhaust path.

25. The processing apparatus according to claim 23, wherein the processing performed in the processing chamber is film formation by a plasma CVD process.

26. The processing apparatus according to claim 23, wherein the chemical reaction causing means comprises at least a high-melting metal filament as a main constituent.

27. The processing apparatus according to

claim 26, wherein the high-melting metal filament comprises at least one of tungsten, molybdenum and rhenium.

28. A process of processing an exhaust gas exhausted from a processing space for processing a substrate or a film therein, which comprises exhausting the exhaust gas so as to be in contact with a heat generating member provided in an outlet of the processing space and controlled so as to have a current density within the range of 5 to 500 A/mm^2, whereby a chemical reaction is caused in a non-reacted gas and/or a by-product contained in the exhaust gas.

29. The exhaust gas processing process according to claim 28, wherein the processing process of the substrate or the film is a plasma CVD process.

30. The exhaust gas processing process according to claim 28, wherein when a power supply to the heat generating member is started, an applied current density is gradually raised.

31. The exhaust gas processing process according to claim 28, wherein when a power supply to the heat generating member is stopped, an applied current density is gradually lowered.

32. The exhaust gas processing process according to claim 28, wherein during a power supply to the heat generating member, a predetermined current density is controlled to be constant.

33. The exhaust gas processing process according to claim 28, wherein the heat generating member is used in plurality, and wherein at least one heat generating member is controlled with a current density distribution which is different by at least 10 A/mm^2 from that of the other heat generating members.

34. The exhaust gas processing process according to claim 28, wherein the heat generating member comprises tungsten.

35. A processing apparatus having a processing chamber and an exhaust means for exhausting a gas from the processing chamber, comprising, in an exhaust path connecting the processing chamber and the exhaust means, a region with a different mean velocity of the gas from that of the processing chamber, and a chemical reaction causing means provided in the region, for causing a chemical reaction in a non-reacted gas and/or a by-product exhausted from the processing chamber.

36. The processing apparatus according to

claim 35, wherein the mean velocity of the gas of the region having the chemical reaction causing means is larger than the mean velocity of the processing chamber.

37. The processing apparatus according to claim 35, wherein the chemical reaction causing means comprises a high-melting metal filament.

38. The processing apparatus according to claim 37, wherein the material of the high-melting metal filament is a metal or an alloy comprising as a main component at least one of tungsten, molybdenum and rhenium.

39. A plasma processing process which uses a plasma processing apparatus having a processing chamber for plasma-processing a substrate or a film and an exhaust means for exhausting a gas from the processing chamber, the process comprising using a chemical reaction causing means provided in an exhaust pipe connecting the processing chamber and the exhaust means, for causing a chemical reaction in a non-reacted gas and/or a by-product exhausted from the processing chamber, wherein the emission intensity of a plasma on the side of the exhaust means of the chemical reaction causing means is smaller than the emission intensity of

a plasma on the side of the processing chamber.

40. The plasma processing process according to claim 39, wherein the atmosphere gas in the processing chamber is introduced into the chemical reaction causing means while maintaining a plasma state.

41. The plasma processing process according to claim 39, wherein extension of a plasma to the side of the exhaust means from the processing chamber is attenuated or inhibited by the chemical reaction causing means.

42. The plasma processing process according to claim 39, wherein the chemical reaction causing means comprises at least one of a reaction means by a catalyst, a reaction means by a heated catalyst, and a reaction means by a heat generating member.

43. The plasma processing process according to claim 39, wherein the non-reacted gas and/or the by-product exhausted from the processing chamber comprises silicon.

44. The plasma processing process according to claim 39, wherein the plasma processing comprises at least one of film deposition, doping, etching, and H_2

plasma processing.

45. A processing apparatus having a processing space and an exhaust means for exhausting a gas from the processing space, comprising a chemical reaction causing means provided in an exhaust path connecting the processing space and the exhaust means, for causing a chemical reaction in a non-reacted gas and/or a by-product during the processing, and a cooling means provided on the side of the exhaust means of the chemical reaction causing means.

46. The processing apparatus according to claim 45, wherein the cooling means uses a liquid as a cooling medium.

47. The processing apparatus according to claim 45, wherein the cooling means uses a gas as a cooling medium.

48. The processing apparatus according to claim 45, further comprising a heat insulating means provided between the chemical reaction causing means for causing the chemical reaction in the non-reacted gas and/or the by-product during the processing and the processing space.

49. The processing apparatus according to claim 45, comprising a heat insulating means provided between the means for causing the chemical reaction in the non-reacted gas and/or the by-product during the processing and a processing object.

50. The processing apparatus according to claim 45, further comprising means for controlling the temperature of a member forming the processing space to be constant.

51. The processing apparatus according to claim 45, further comprising a heat insulating means adjacent the chemical reaction causing means for causing the chemical reaction in the non-reacted gas and/or the by-product during the processing, on the side of the exhaust means thereof.

52. The processing apparatus according to claim 45, wherein the means for causing the chemical reaction in the non-reacted gas and/or the by-product during the processing comprises allowing the non-reacted gas and/or the by-product to pass through a flow path in which a catalyst acting on the non-reacted gas and/or the by-product is provided.

53. The processing apparatus according to

claim 45, wherein the means for causing the chemical reaction in the non-reacted gas and/or the by-product during the processing comprises allowing the non-reacted gas and/or the by-product to pass through a flow path in which a heat generating member is disposed.

54. The processing apparatus according to claim 45, wherein the non-reacted gas and/or the by-product comprises silicon.

55. A processing apparatus having a processing space and an exhaust means for exhausting a gas from the processing space, comprising a chemical reaction causing means provided in an exhaust path between the processing space in a chamber having the processing space and the exhaust means, for causing a chemical reaction in a non-reacted gas and/or a by-product during the processing, and a cooling means provided in at least a part of the exhaust path between the processing space and the exhaust means.